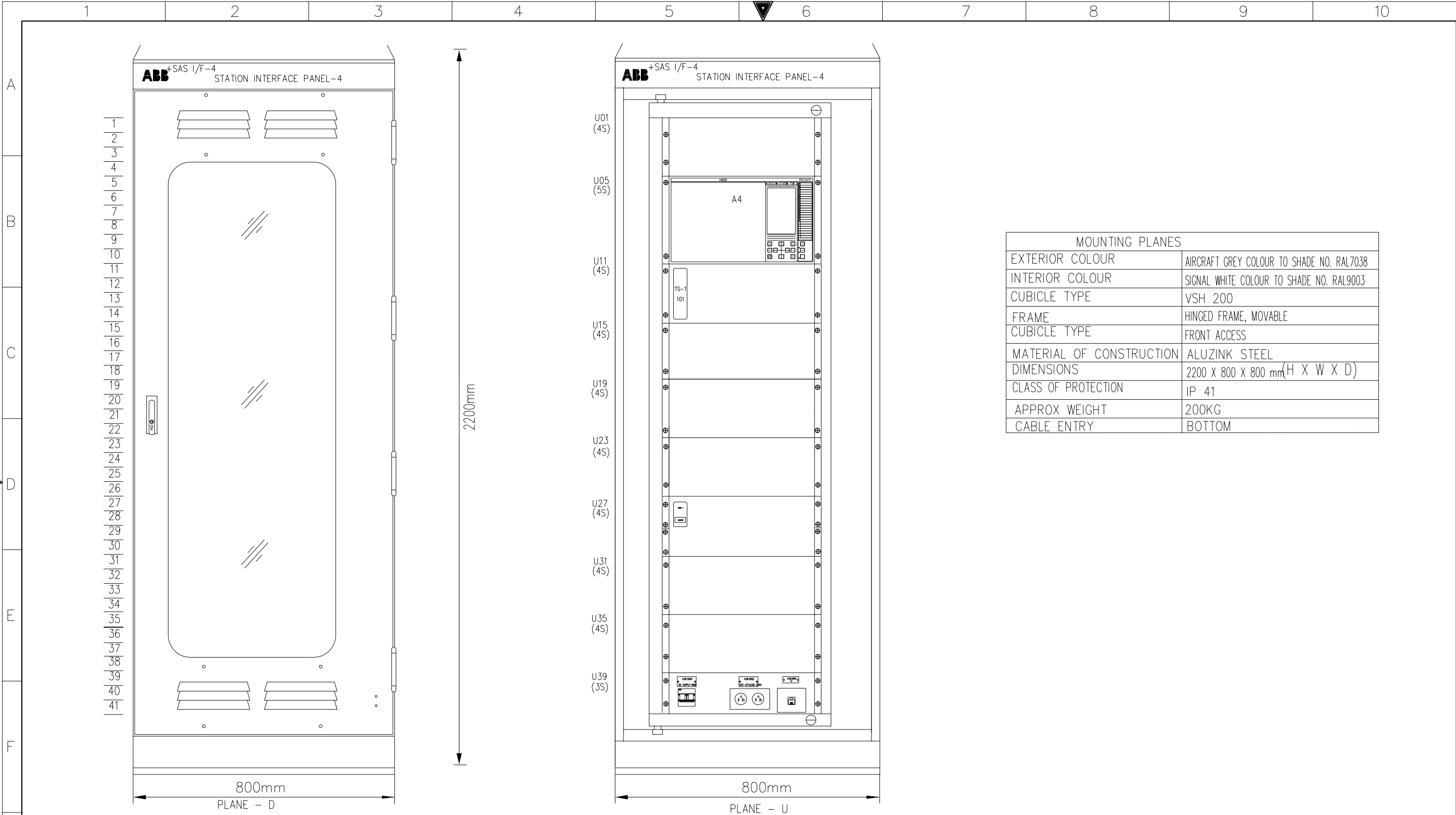


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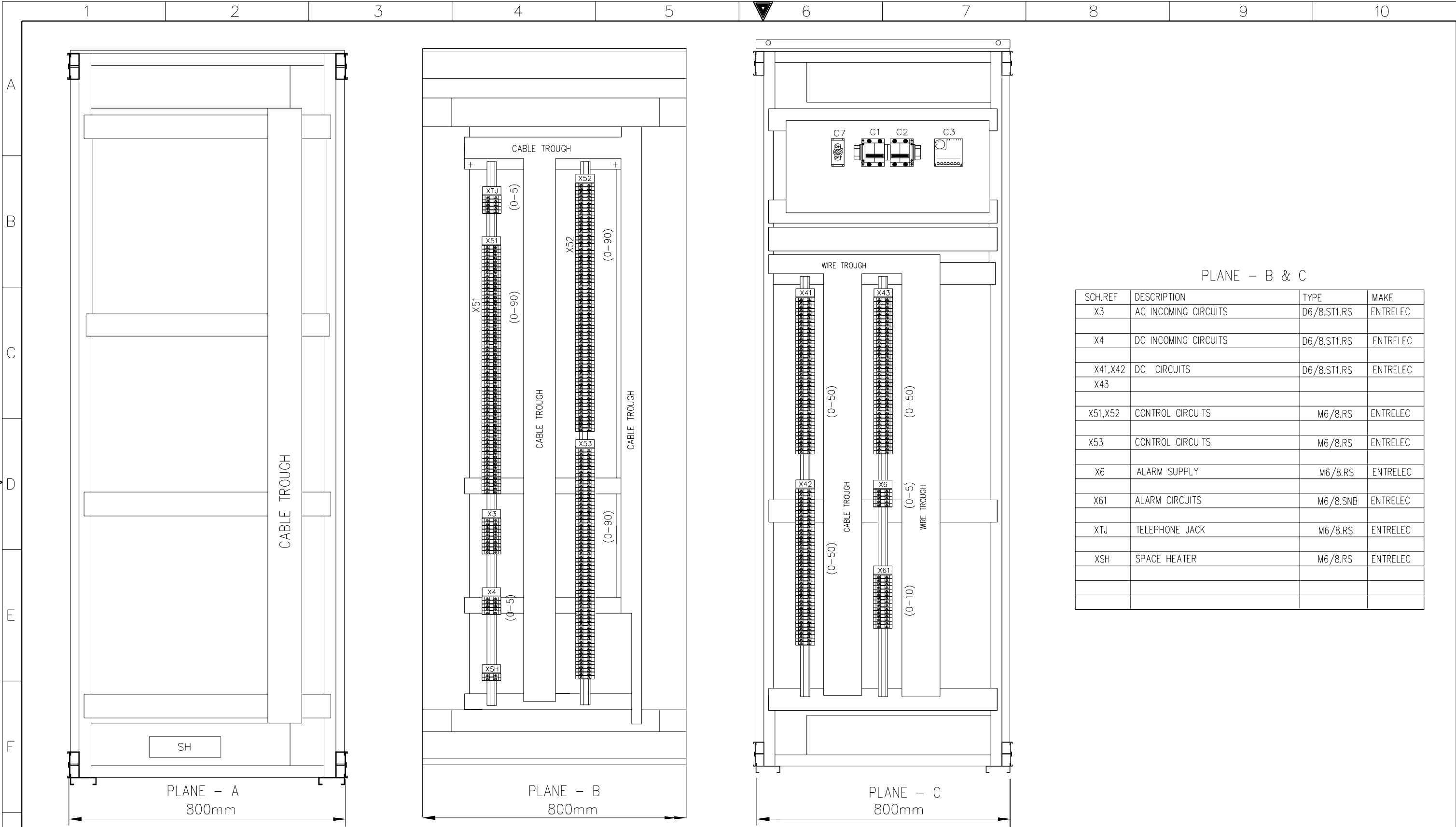
AS-BUILT BY _____ DATE _____ CONTRACT NO. 11131060/00 JOB ORDER NO. S-13516

00	13 20	FOR APPROVAL
REV. NO.	DATE	DESCRIPTION

DRAWN BY	RIZ	CHECKED BY	JKR
DATE STARTED	15.3.2013	DATE COMPLETED	
OPRG. DEPT.	CTPD	ENG. DEPT.	AUT-PSAC

ASSEMBLY DRAWING	
SAS INTERFACE PANEL +SAS I/F-4	
S/S 8833	S-13516
RIYADH	SAUDI ARABIA

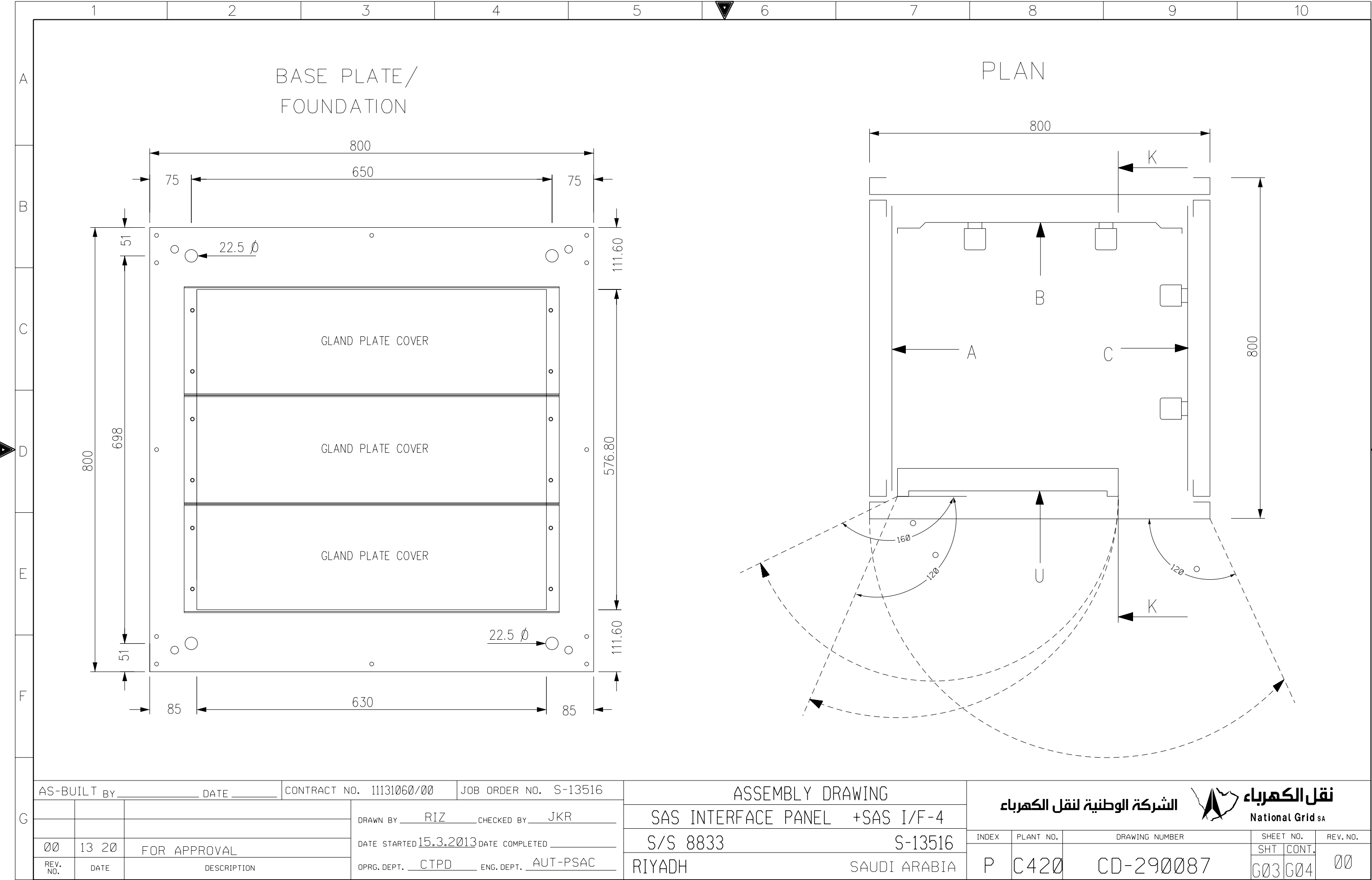
الشركة الوطنية لنقل الكهرباء National Grid sa				
INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.
P	C420	CD-290087	G01 G02	00



PLANE - B & C

SCH.REF	DESCRIPTION	TYPE	MAKE
X3	AC INCOMING CIRCUITS	D6/8.ST1.RS	ENTRELEC
X4	DC INCOMING CIRCUITS	D6/8.ST1.RS	ENTRELEC
X41,X42 X43	DC CIRCUITS	D6/8.ST1.RS	ENTRELEC
X51,X52	CONTROL CIRCUITS	M6/8.RS	ENTRELEC
X53	CONTROL CIRCUITS	M6/8.RS	ENTRELEC
X6	ALARM SUPPLY	M6/8.RS	ENTRELEC
X61	ALARM CIRCUITS	M6/8.SNB	ENTRELEC
XTJ	TELEPHONE JACK	M6/8.RS	ENTRELEC
XSH	SPACE HEATER	M6/8.RS	ENTRELEC

G	AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131060/00		JOB ORDER NO. S-13516		ASSEMBLY DRAWING		الشركة الوطنية لنقل الكهرباء نقل الكهرباء National Grid sa								
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	REV. NO.	DATE	DESCRIPTION		OPRG. DEPT. CTPD		ENG. DEPT. AUT-PSAC		RIYADH SAUDI ARABIA			G02		G03			
										P	C420	CD-290087				00	



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B										
C										
D	CONTRACTOR : ABB Contracting Co									
E	CLIENT : SAUDI ELECTRICITY COMPANY CENTRAL OPERATING AREA									
F	PROJECT : Construction Of New 132/13.8kV AT SOUTH WEST UNAIZAH									
	SUBSTATION : S/S 8833									
	CONTRACT NO. : 11131060/00									
	TITLE : LIST OF APPARATUS +SAS I/F-4									
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	00	13 20	FOR APPROVAL		RIYADH SAUDI ARABIA		P	C420	CD-290087	L00L01
	REV. NO.	DATE	DESCRIPTION		OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC					REV. NO.

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SR. NO.	GA REF.	SCH. REF.	D E S C R I P T I O N	SHEET NO.	QTY.	TYPE	MAKE	ORDERING INFORMATION	COUNTRY OF ORIGIN
			STATION INTERFACE PANEL-4						
1	U05.5001	A4	STATION COMMON ALARM SWITCHING EQUIPMENT WITH FOLLOWING SPECIFICATION AUX : EL=90-250V DC FREQ : 50/60HZ BINARY INPUT : 14 NOS(PER CARD 16 INPUTS RL=110-125DC)	291 TO 296	1	REC 670	ABB	1MRK 002814-AC	SWEDEN
2	U11.101	TS-1	TEST SWITCH FOR REC 670 (A4)	245	1	RTXP18	ABB	RK 926 115-AN	SWEDEN
3	U27.101	74IF	DUAL TARGET RELAY (REVERSE FLAG) (A1 DC FAIL/SPARE) CONTACTS :1NO+2NC PER COIL AUX.VOLT :1NO+2NC PER COIL FLAG :SELF RESET	245	1	RXSF1	ABB	RK 271 019 AN	SWEDEN
4			MCB 2 POLE 6A, FOR DC SUPPLY WITH 2NC AUXILIARY CONTACT	216	1	S 282 UC-K6	ABB	GH S282 0164 R0377	GERMANY
	U39.5001	Q1	Q1 IF+ SUPPLY			S2-H02		GH S270 1916 R0003	
5	U39.5002	C01	CONVENIENCE OUTLET 10A, 127V AC	211	1	USM45 &	LEGRAND	74140 & 74180	FRANCE
		C02	CONVENIENCE OUTLET 10A, 220V AC			USMS45			
		C1,C2	MINIATURE CIRCUIT BREAKER, 2 POLE, 10A FOR CONVENIENCE OUTLET WITH AUXILIARY SWITCH, 1NO + 1NC CONTACTS	211	2	S202-C10	ABB	2CDS 253 001 R0104	GERMANY
						S2C-H11L		2CDS 200 936 R0001	
6		C3	THERMOSTAT FOR SPACE HEATER, 5-60 C	211	1	SK 3110	RITTAL	SK 3110	THIWAN
7	U39.5003	TJ	TELEPHONE JACK 1GANG 4WIRE	211	1	EDF410	EDISON	EDF410	SWEDEN
8		C7	ON/OFF SWITCH FOR SPACE HEATER	211	1	M2SS1-10B	ABB	1SFA 611 200 R1006	
						MCBH-10		1SFA 611 605 R1101	
9		DS	DOOR SWITCH FOR CONTROL OF CUBICLE INTERNAL ILLUMINATION LAMP	211	1	LS30P	ABB	1SBV 010213 R1202	SWEDEN
10			INTERNAL ILLUMINATION CUBICLE LAMP SUITABLE FOR 127V AC, 60Hz SUPPLY, 20W	211	1	T-4	SUNON	SP-20W	
11		SH	SPACE HEATER, 150W, 120V, 60Hz	211	1	MICA	GRUPPO	1FZEK 006 C001	ITALY

AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131060/00	JOB ORDER NO. S-13516	LIST OF APPARATUS		الشركة الوطنية لنقل الكهرباء  نقل الكهرباء National Grid SA				
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REV. NO.	DATE	DESCRIPTION					P	C420	CD-290087	SHT L01	CONT. L02
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NG/D2-D (2012/01)

DMS VECTOR

NGD200

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B	SR. NO.	ITEM DESIGNATION	D E S C R I P T I O N		SHEET.NO.	QTY.	TYPE	MAKE	ORDERING INFORMATION	COUNTRY OF ORIGIN
	11	X3	SPRING LOADED TERMINAL BLOCKS FOR DISCONNECTABLE AC CIRCUITS		301	10	D6/8.ST1.RS	ENTRELEC	1SNA 115 831 R0400	FRANCE
		X4	SPRING LOADED TERMINAL BLOCK FOR DISCONNECTABLE DC CIRCUITS		301,302	5	D6/8.ST1.RS	ENTRELEC	1SNA 115 831 R0400	FRANCE
		X41,X42	SPRING LOADED TERMINAL BLOCK FOR DISCONNECTABLE DC CIRCUITS		301,302	50,50	D6/8.ST1.RS	ENTRELEC	1SNA 115 831 R0400	FRANCE
		X43				50				
		X51,X52	SPRING LOADED TERMINAL BLOCK FOR DC PROTN. CIRCUITS		301,302	90,90	M6/8.RS	ENTRELEC	1SNA 115 688 R2500	FRANCE
		X53				90				
		X61,X6	KNIFE TYPE TERMINAL BLOCKS FOR COMMON ALARM CIRCUITS		302	10,5	M6/8.SNB	ENTRELEC	1SNA 115 685 R1200	FRANCE
		XTJ	SPRING LOADED TERMINAL BLOCKS FOR TELEPHONE JACK		302	5	M6/8.RS	ENTRELEC	1SNA 115 688 R2500	FRANCE
		XSH	SPRING LOADED TERMINAL BLOCKS FOR SPACE HEATER		302	3	M6/8.RS	ENTRELEC	1SNA 115 688 R2500	FRANCE
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NG/D2-D (2012/01)

DMS VECTOR

NGD200

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A B C D E F	SYMBOL		DESCRIPTION		SYMBOL		DESCRIPTION		SYMBOL		DESCRIPTION								
			FRAME CONNECTION				MAIN CONTACT OF A CIRCUIT BREAKER				RELAY WITH TWO MAKE CONTACTS, ONE OF THEM DELAYED WHEN OPERATING								
			EARTH CONNECTION				PASSING MAKE CONTACT CLOSING MOMENTARILY DURING OPERATION AND RELEASE				RELAY WITH TWO ACTUATORS AND A TWO STABLE POSITIONS								
			RESISTOR				BREAK CONTACT DELAYED WHEN OPERATING												
			VARIABLE RESISTOR				MAKE CONTACT DELAYED WHEN RELEASING				SIGNALLING LAMP								
			RESISTOR WITH PRESET ADJUSTMENT				TWO MECHANICAL LINKS CROSSING WITHOUT CONNECTION				MECHANICAL INDICATOR WITH AUTOMATIC RESET								
			CAPACITOR				JUNCTION OF MECHANICAL LINKS				MECHANICAL INDICATOR WITH NON-AUTOMATIC RESET								
			SEMICONDUCTOR DIODE USED AS A CAPACITIVE DEVICE				AUTOMATIC RESET				ELECTRICALLY CONTROLLED MECHANICAL INDICATOR WITH AUTOMATIC RESET								
			OPEN CONTACT, MAKE CONTACT				NON-AUTOMATIC RESET												
			CLOSED CONTACT, BREAK CONTACT				SWITCHING DEVICE WITH MANUAL OPERATION AND WITH AUTOMATIC RESET				RELAY WITH MAKE CONTACT								
			CHANGE-OVER CONTACT, BREAK BEFORE MAKE				SWITCHING DEVICE WITH MANUAL OPERATION AND WITH NON-AUTOMATIC RESET				RELAY WITH CHANGE-OVER CONTACT								
			MAKE CONTACT WHICH IS EARLY WHEN OPERATING AND LATE WHEN RELEASING				CHANGE-OVER SWITCHING DEVICE WITH MANUAL CONTROL AUTOMATIC RESET FROM POSITION 1-2 TO THE NEUTRAL POSITION				ELECTRO-MECHANICAL POSITION INDICATOR WITH ONE DE-ENERGIZED AND ONE OPERATED POSITION								
			BREAK CONTACT WHICH IS LATE WHEN OPERATING AND EARLY WHEN RELEASING				RELAY WITH MAKE CONTACT, DELAYED WHEN OPERATING				ELECTRO-MECHANICAL POSITION INDICATOR WITH ONE DE-ENERGIZED AND TWO OPERATED POSITION								
			SWITCHING DEVICE WITH MANUAL CONTROL				RELAY WITH MAKE CONTACT, DELAYED WHEN RELEASING				BELL, BUZZER								
			MAKE CONTACT DELAYED WHEN OPERATING				RELAY WITH MAKE CONTACT, DELAYED WHEN OPERATING AND RELEASING				SIREN , HORN								
			BREAK CONTACT DELAYED WHEN RELEASING																
			MAKE CONTACT DELAYED WHEN OPERATING AND RELEASING																
			MAIN CONTACT OF A SWITCH DISCONNECTOR																
		MAIN CONTACT OF A DISCONNECTOR																	

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G	LEGENDS ±R1 ±R2 ±R3 ±IT FL BB RS± BB CBF± /CBF± DC SUPPLY – MAIN PROTECTION DC SUPPLY – SECONDARY PROTECTION DC SUPPLY – BACK UP PROTECTION DC SUPPLY – INTER TRIP DC SUPPLY – FLASHING CIRCUIT DC SUPPLY – BUS BAR – PROTECTION RESET DC SUPPLY – CBF PROTECTION R CR ECC LOCAL REMOTE RESET BUS – ALARM SYSTEM CONTROL ROOM ENERGY CONTROL CENTRE THE LOCATION OF CONTROLLED DEVICE ANY OTHER LOCATION NOT LOCAL ON OFF A T S CS CT LS LT LC LO RO CB NORMALLY OPEN AUXILIARY CONTACT CB NORMALLY CLOSED AUXILIARY CONTACT COMMON TEST POSITION SERVICE POSITION CLOSE IN SERVICE POSITION CLOSE IN TEST POSITION LOCAL SERVICE LOCAL TEST LOCAL CLOSE LOCAL OPEN REMOTE OPEN NOTES LABELS WHITE LABEL WITH BLACK LETTERING WILL BE PROVIDED FOR ALL MOUNTED APPARATUS EQUIPMENT IDENTIFICATION AND FUNCTION REFERENCE LABEL WILL BE PROVIDED FOR FRONT MOUNTED EQUIPMENTS OF THE PANEL AND EQUIPMENT IDENTIFICATION LABEL WILL BE PROVIDED FOR INTERNALLY MOUNTED EQUIPMENTS WIRING PVC INSULATED 600V GRADE 2.5 SQ.mm. YELLOW COLOURED FOR CT CIRCUITS 2.5 SQ.mm. RE COLOURED FOR VT CIRCUITS 1.5 SQ.mm. GREY COLOURED FOR DC SUPPLY, SCADA AND CONTROL CIRCUITS 1.5 SQ.mm. BLUE COLOURED FOR COMMON ALARM SIGNALS 2.5 SQ.mm. BLACK COLOURED FOR AVC AND AC CIRCUITS 2.5 SQ.mm. YELLOW/GREEN COLOURED FOR EARTHING CONNECTIONS FOLLOWING MARKERS SHALL BE PROVIDED ON FOLLOWING WIRES: + SIGN FOR DC + WIRE – SIGN FOR DC – WIRE LUGS A. CT CIRCUITS– RING TYPE B. OTHER CIRCUITS – SPADE TYPE FERULLING YELLO TUBE 3.2 mm FOR 1.5SQ mm WIRES AND 4.2 FOR 2.5 SQ mm WIRES (AS PER 31 – TMSS–1, RE.0)									

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1 2 3 4 5 6 7 8 9 10

A

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C

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E

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G

FOR 132kV RELAY & CONTROL, PROTN. PANELS

TS 17A 17B TS 18A 4

21 9 8 21-8/TS-18A 8 18A

TS-17B/X4 21-5/TS-18A

TB X4 TB X3

5 7 T X3-7/21-4 21 5 4

AS PER IEC-391 FIG 14a (W/O SUPPLEMENTARY/IDENTIFICATION MARK)

FOR 132kV PANELS INTERPANEL WIRING

PANEL REF.: +R03.1 X6 5 X6:5/+R03.2-X6:10 X6:10/+R03.1-X6:510 X6 510 PANEL REF.: +R03.2

AS PER IEC-391 FIG 14d (W/O SUPPLEMENTARY/IDENTIFICATION MARK)

WIRES - PVC insulated, stranded, coated annealed copper conductor graded for 1000V

LUGS - Pre-Insulated

a. CT Circuits - 2.5 Sqmm PVC Yellow colour

b. VT Circuits - 2 Sqmm PVC Red colour

c. DC, & CONTROL Circuits - 1.5 Sqmm PVC Grey colour

d. Alarm Circuits - 1.5 Sqmm PVC Blue colour

e. AVC & AC Circuits - 2.5 Sqmm PVC Black colour

f. Earth Circuits - 2.5 Sqmm PVC Yellow/Green colour

a(CT Circuits - Ring type

b(Other Circuits - Spade type

NOTE:1 ADDITIONAL MARKING AS APPLICABLE

NOTE:2 FERRULE NUMBERING WILL BE BLACK LETTERS ON YELLOW TUBE

3.2 mm for 1.5 sq mm wires and

4.2 mm for 2.5 sq mm wires

(As per 31-TMSS-1, REV 0)

NOTE:3 STARTING POINT OF THE FERRULE LEFT TO RIGHT

AS-BUILT BY _____ DATE _____ CONTRACT NO. 11131060/00 JOB ORDER NO. S-13516

DRAWN BY RIZ CHECKED BY JKR

DATE STARTED 15.3.2013 DATE COMPLETED _____

OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC

FERRULE AND WIRING DETAILS

SAS INTERFACE PANEL +SAS I/F-4

S/S 8833 S-13516

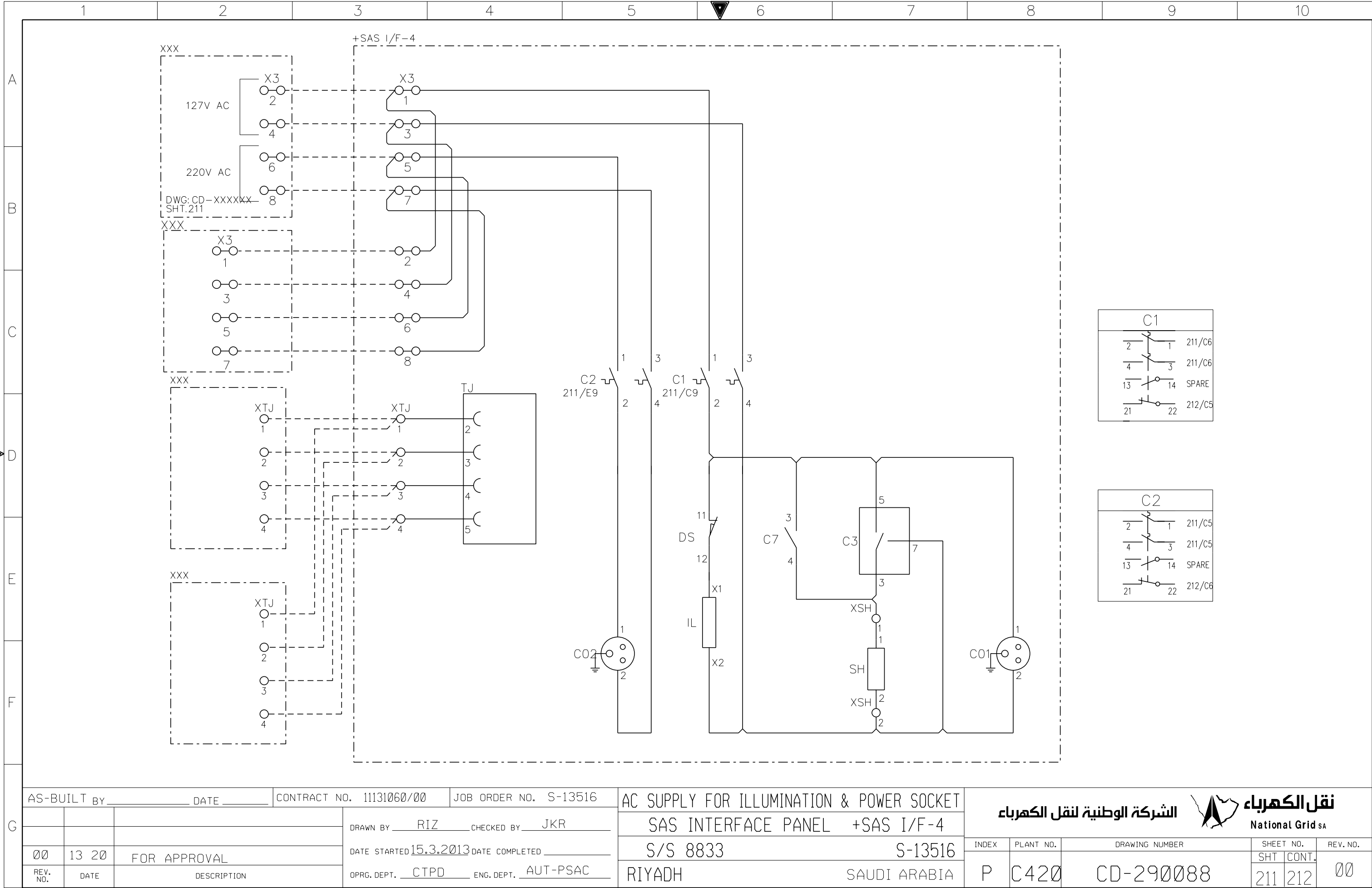
RIYADH SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء

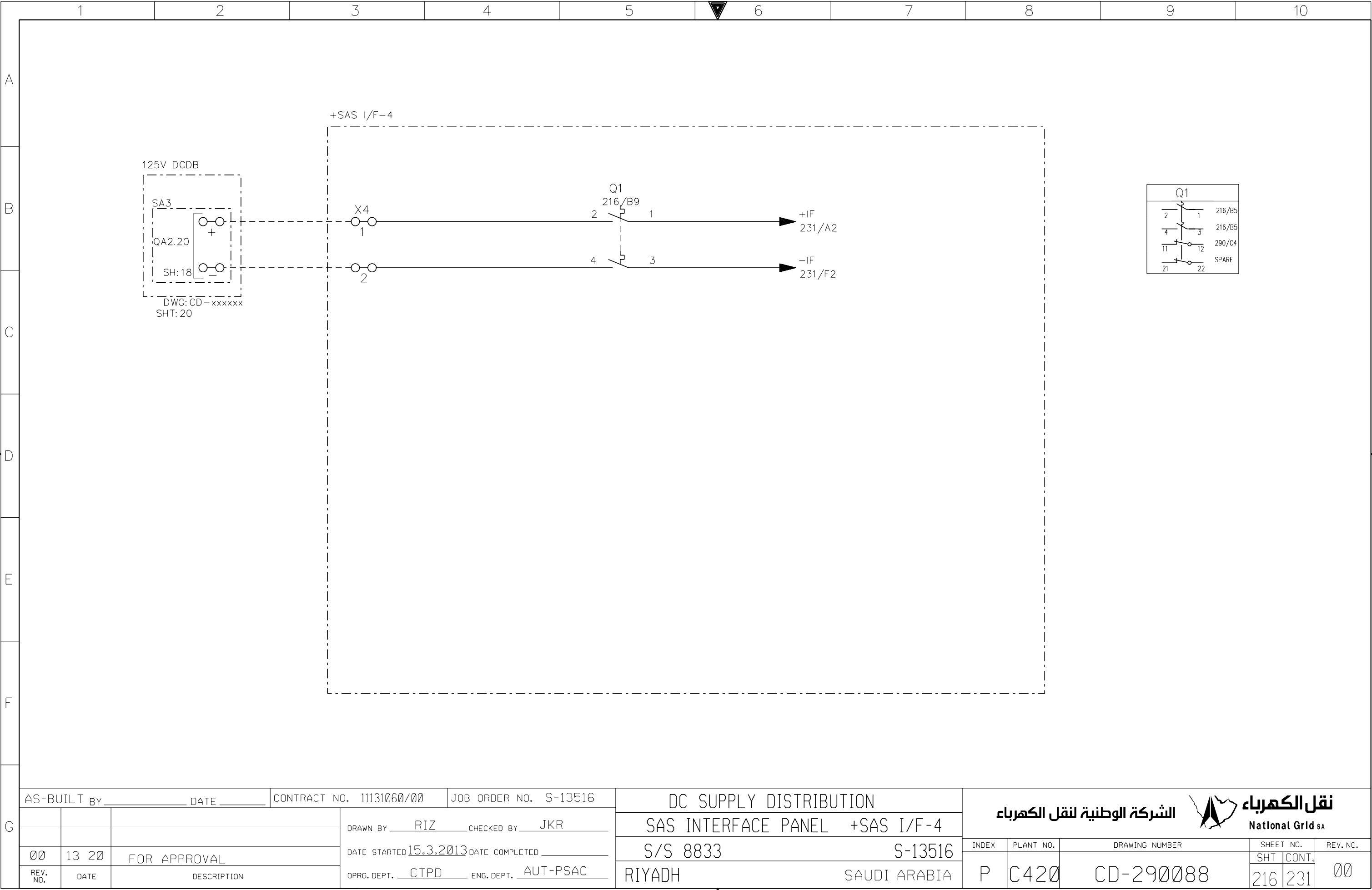
National Grid sa

INDEX PLANT NO. DRAWING NUMBER SHEET NO. REV. NO.

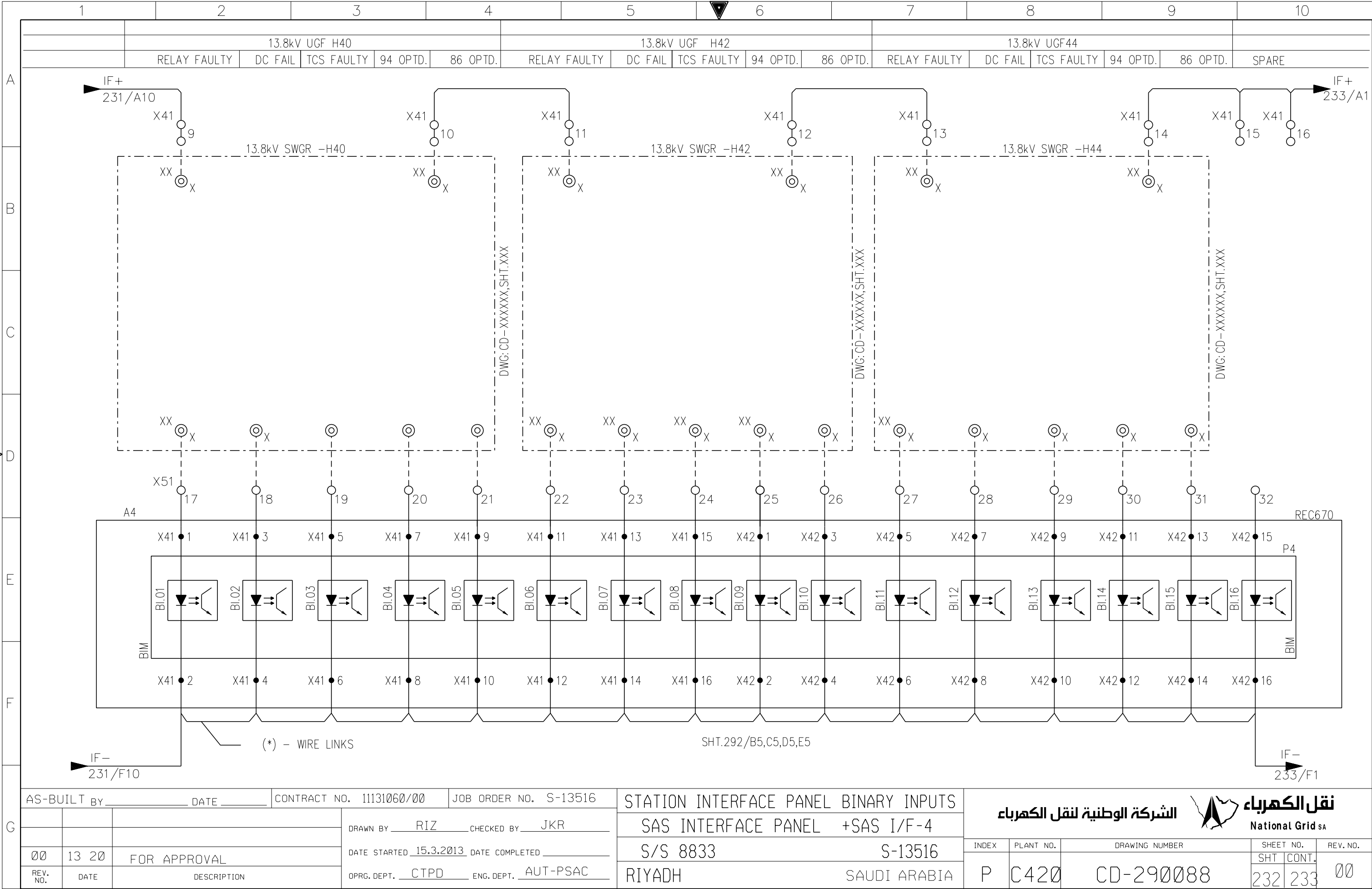
P C420 CD-290088 014 211 00



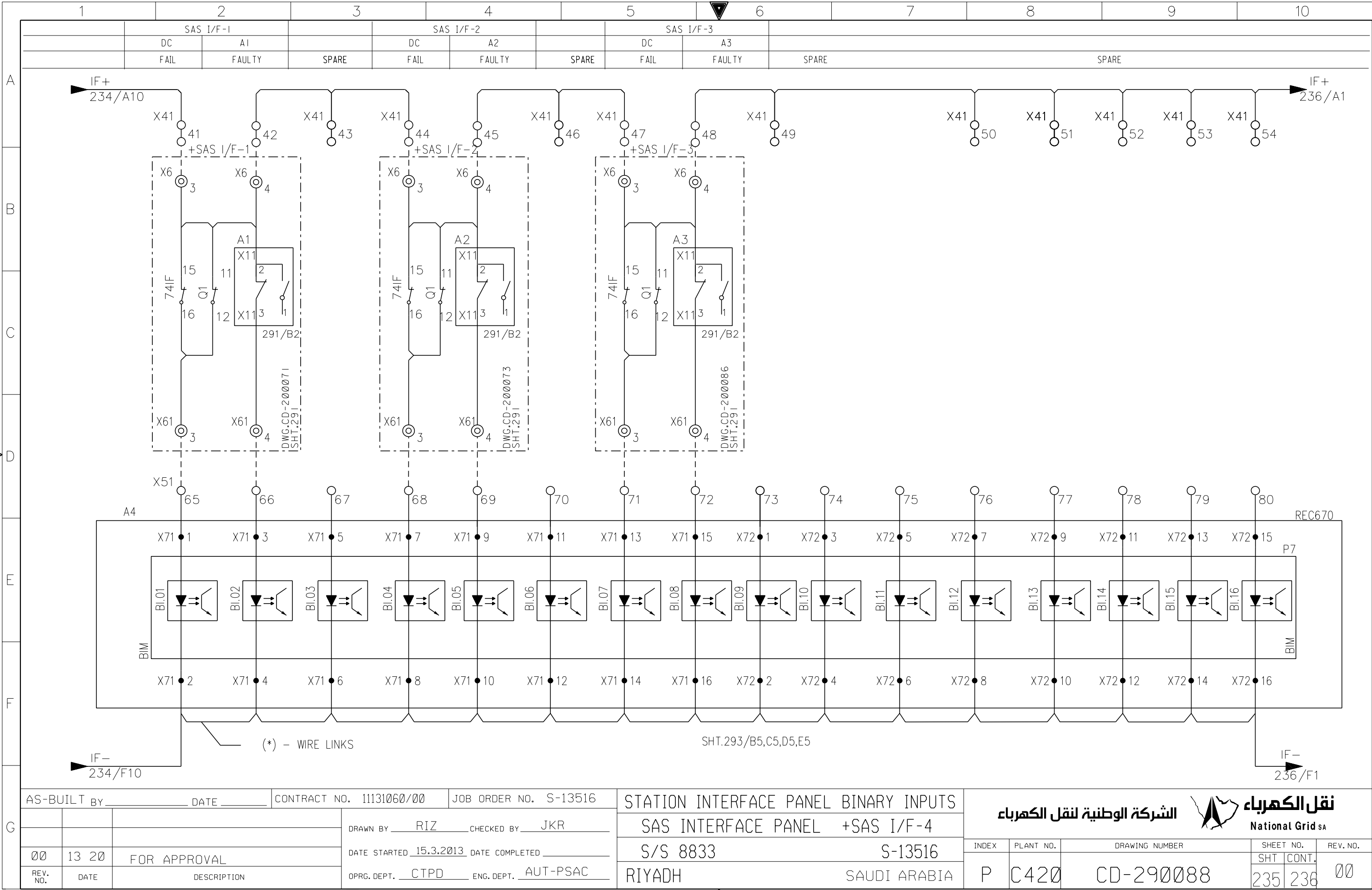
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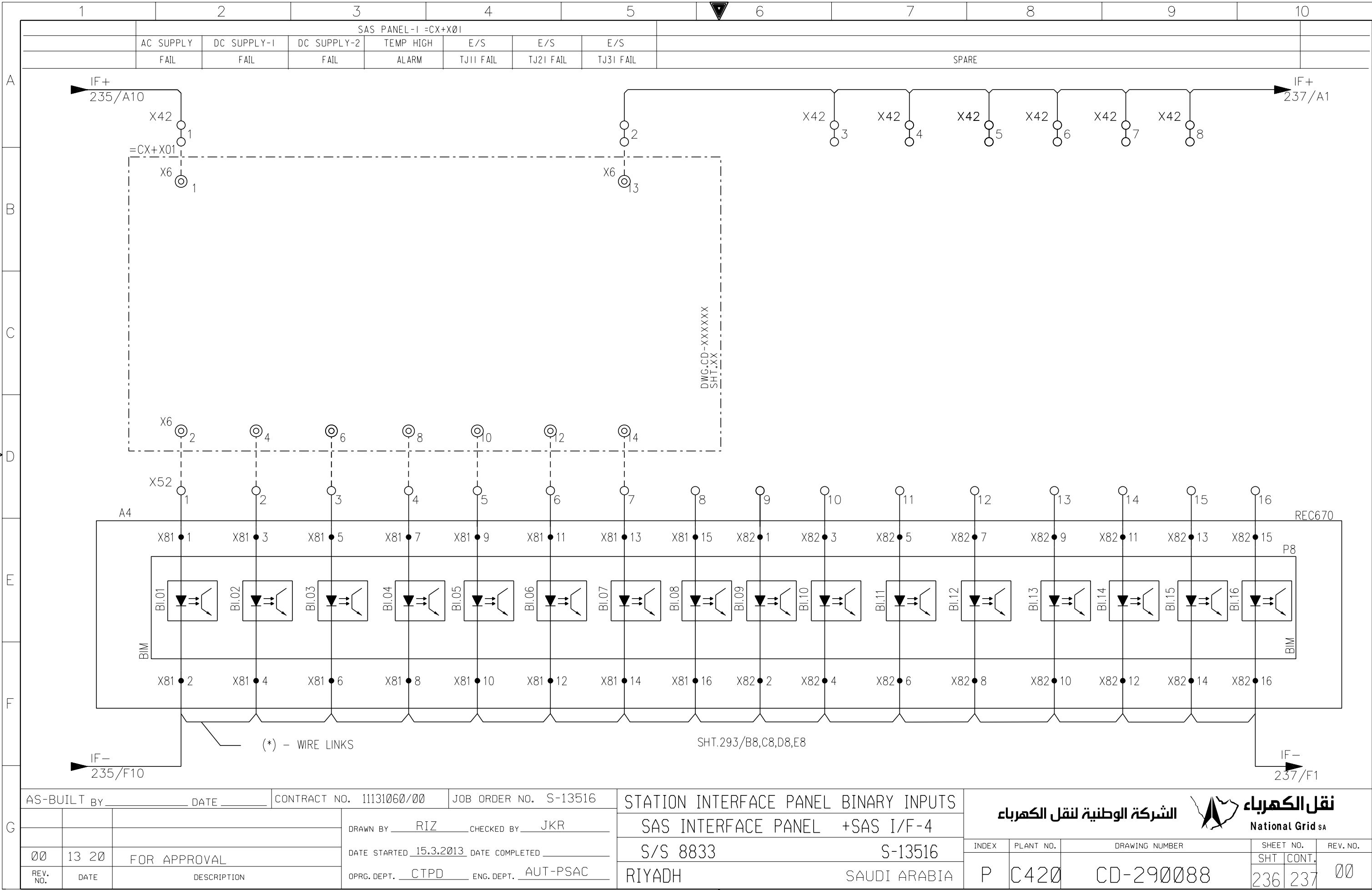
AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131060/00		JOB ORDER NO. S-13516		DC SUPPLY DISTRIBUTION		الشركة الوطنية لنقل الكهرباء نقل الكهرباء National Grid SA						
			DRAWN BY RIZ CHECKED BY JKR		DATE STARTED 15.3.2013 DATE COMPLETED _____		SAS INTERFACE PANEL +SAS I/F-4		INDEX	PLANT NO.	DRAWING NUMBER		SHEET NO.		REV. NO.
00	13 20	FOR APPROVAL					S/S 8833 S-13516		P	C420	CD-290088		SHT	CONT.	00
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC		RIYADH SAUDI ARABIA		216	231							

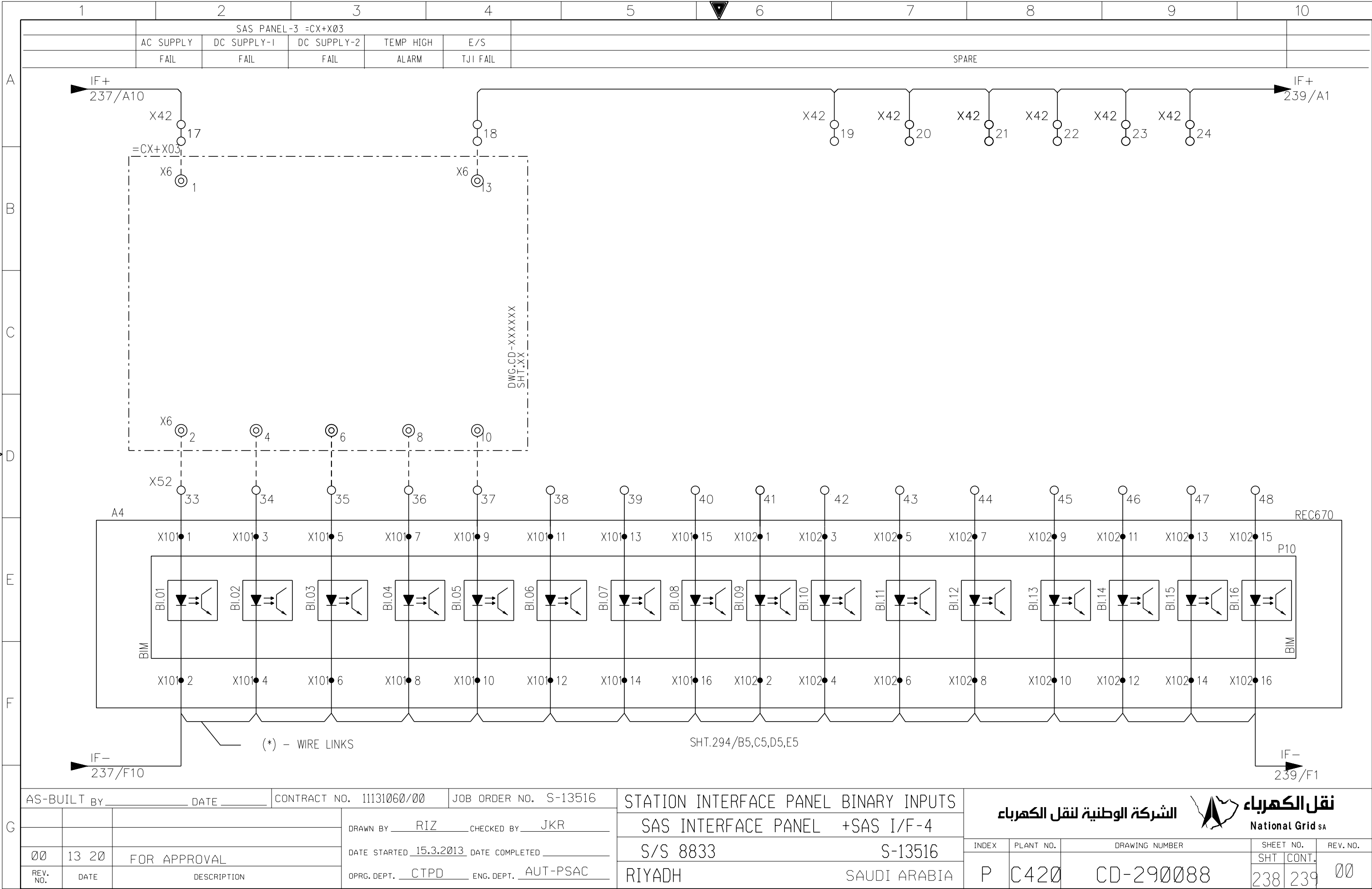


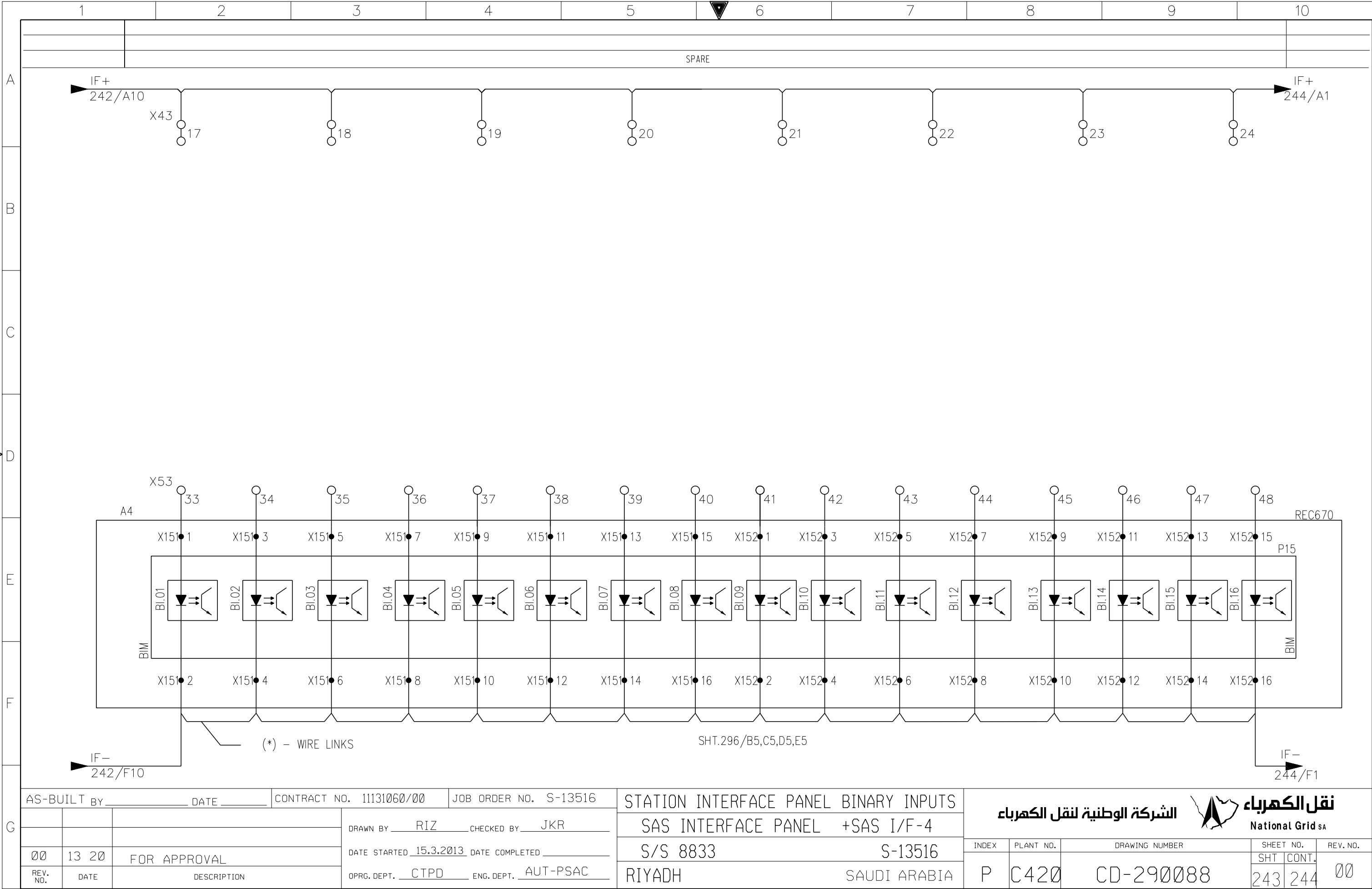
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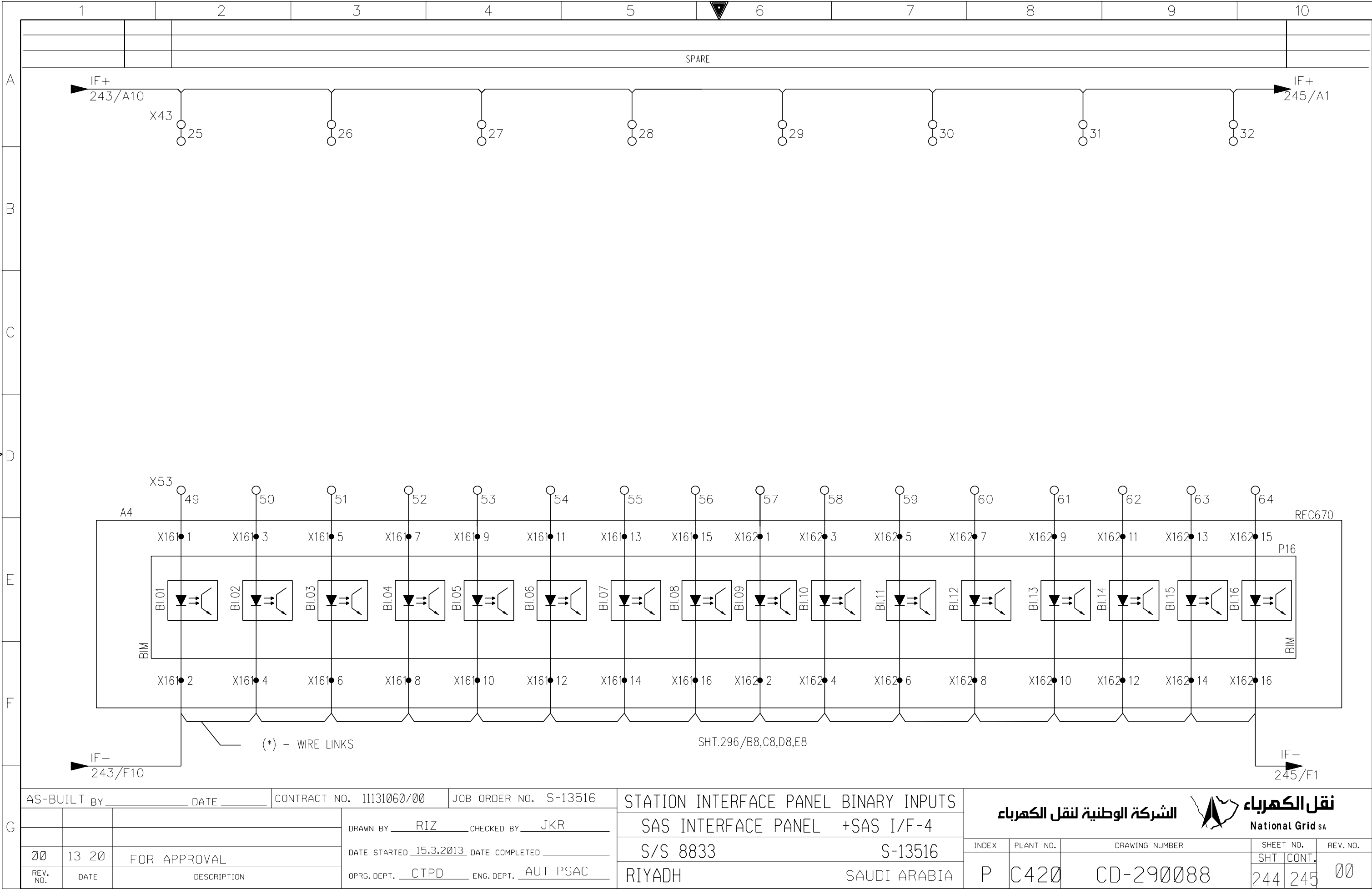
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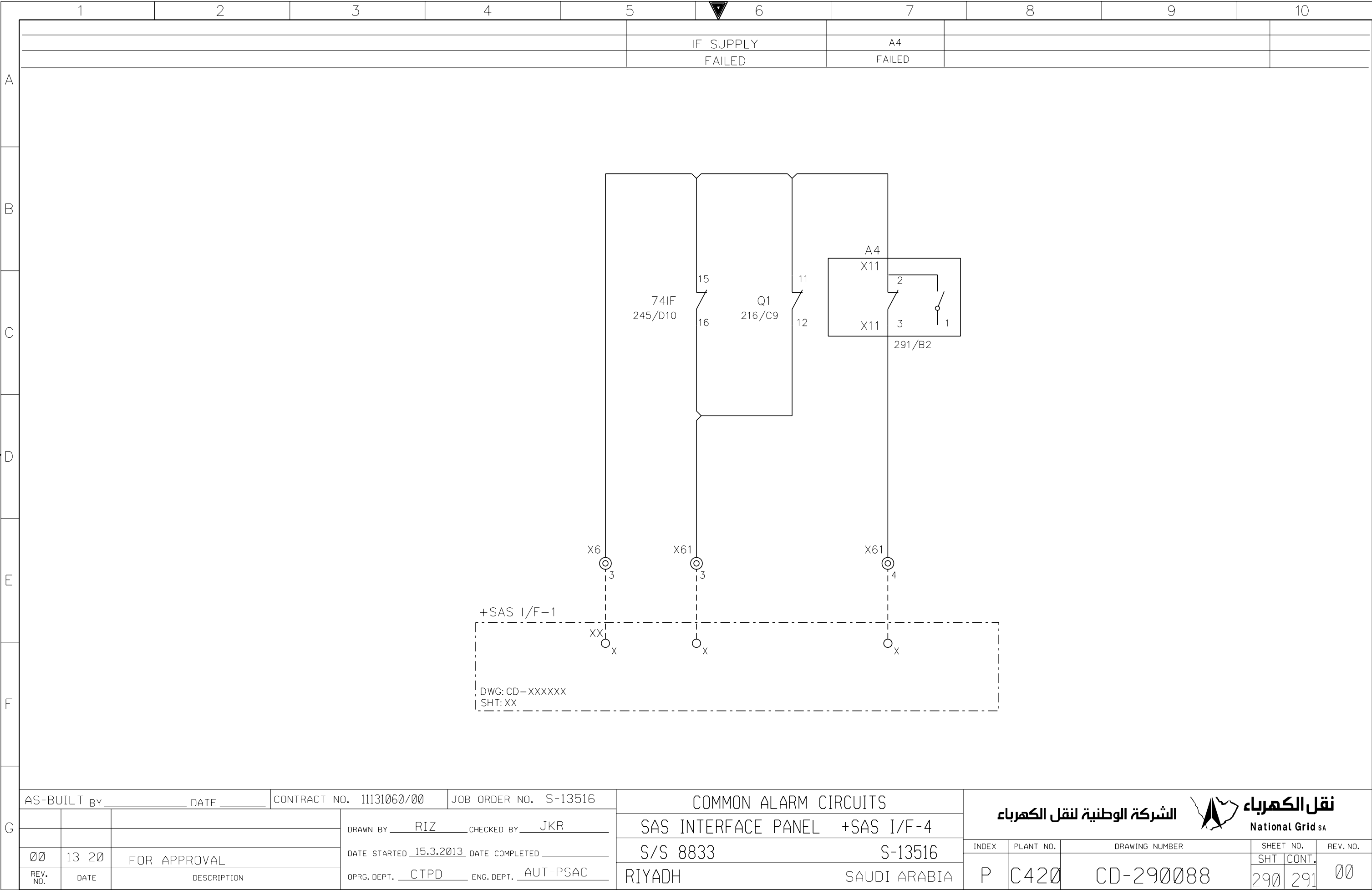
الشركة الوطنية لنقل الكهرباء

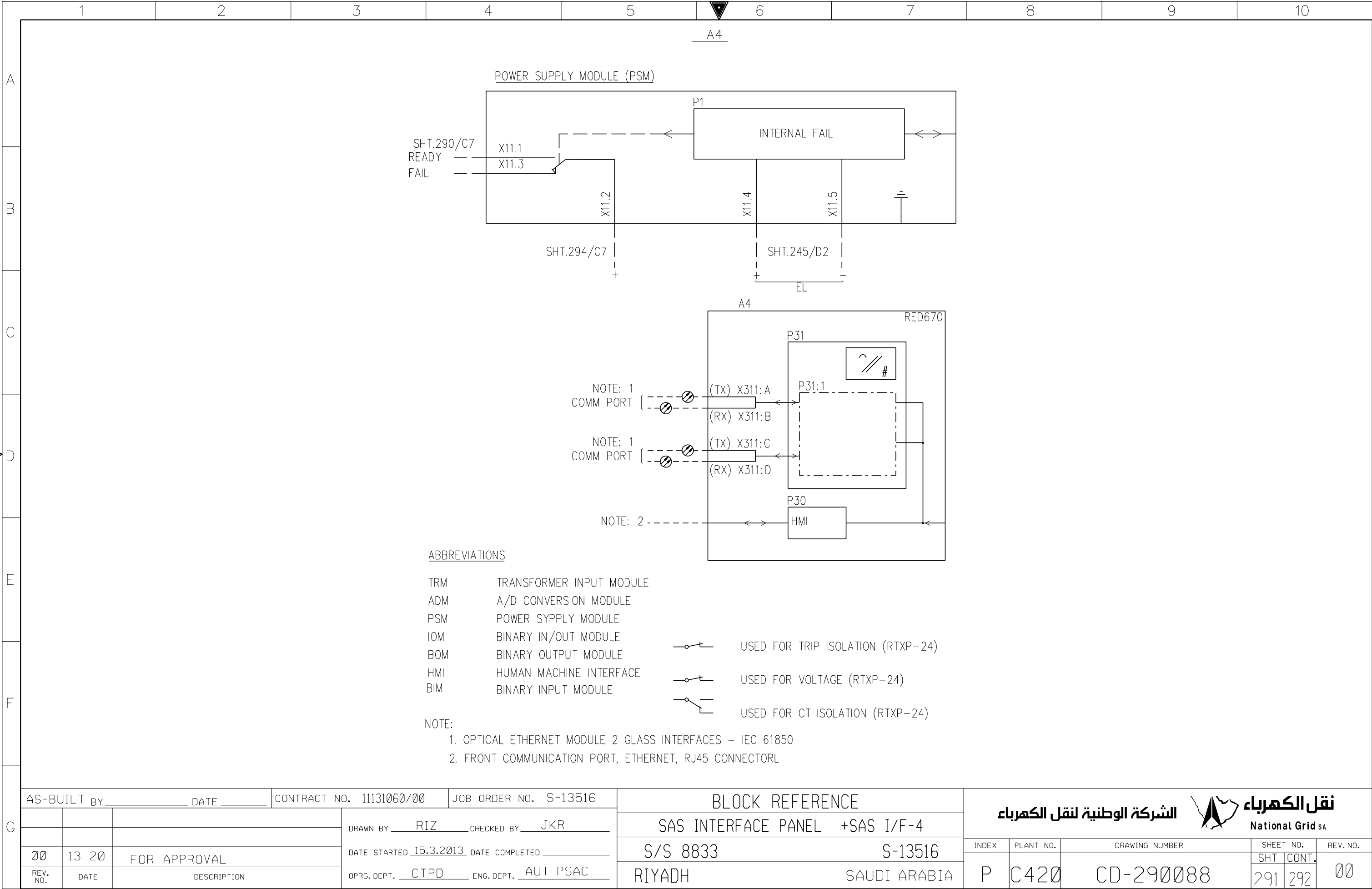
NG/D2-D (2012/01)

DMS

VECTOR

NGD200





	1	2	3	4	5	6	7	8	9	10
A										
B										
C										
D										
E										
F										
G										

A4

BIM P3

REC670

LOCATION=P3

PLANT ADAPTED CONFIGURATION

SHT.234/D1 TO D10

+ -- X61

-- 1 BI.01 //

+ -- 2

-- 3 BI.02 //

+ -- 4

-- 5 BI.03 //

+ -- 6

-- 7 BI.04 //

+ -- 8

-- 9 BI.05 //

+ -- 10

-- 11 BI.06 //

+ -- 12

-- 13 BI.07 //

+ -- 14

-- 15 BI.08 //

-- 16

+ -- X62

-- 1 BI.09 //

+ -- 2

-- 3 BI.10 //

+ -- 4

-- 5 BI.11 //

+ -- 6

-- 7 BI.12 //

+ -- 8

-- 9 BI.13 //

+ -- 10

-- 11 BI.14 //

+ -- 12

-- 13 BI.15 //

+ -- 14

-- 15 BI.16 //

-- 16

A4

BIM P3

REC670

LOCATION=P3

PLANT ADAPTED CONFIGURATION

SHT.235/D1 TO D10

+ -- X71

-- 1 BI.01 //

+ -- 2

-- 3 BI.02 //

+ -- 4

-- 5 BI.03 //

+ -- 6

-- 7 BI.04 //

+ -- 8

-- 9 BI.05 //

+ -- 10

-- 11 BI.06 //

+ -- 12

-- 13 BI.07 //

+ -- 14

-- 15 BI.08 //

-- 16

+ -- X72

-- 1 BI.09 //

+ -- 2

-- 3 BI.10 //

+ -- 4

-- 5 BI.11 //

+ -- 6

-- 7 BI.12 //

+ -- 8

-- 9 BI.13 //

+ -- 10

-- 11 BI.14 //

+ -- 12

-- 13 BI.15 //

+ -- 14

-- 15 BI.16 //

-- 16

A4

BIM P3

REC670

LOCATION=P3

PLANT ADAPTED CONFIGURATION

SHT.236/D1 TO D10

+ -- X81

-- 1 BI.01 //

+ -- 2

-- 3 BI.02 //

+ -- 4

-- 5 BI.03 //

+ -- 6

-- 7 BI.04 //

+ -- 8

-- 9 BI.05 //

+ -- 10

-- 11 BI.06 //

+ -- 12

-- 13 BI.07 //

+ -- 14

-- 15 BI.08 //

-- 16

+ -- X82

-- 1 BI.09 //

+ -- 2

-- 3 BI.10 //

+ -- 4

-- 5 BI.11 //

+ -- 6

-- 7 BI.12 //

+ -- 8

-- 9 BI.13 //

+ -- 10

-- 11 BI.14 //

+ -- 12

-- 13 BI.15 //

+ -- 14

-- 15 BI.16 //

-- 16

AS-BUILT BY _____ DATE _____

CONTRACT NO. 11131060/00

JOB ORDER NO. S-13516

00

13 20

FOR APPROVAL

REV. NO. DATE DESCRIPTION

DRAWN BY RIZ

CHECKED BY JKR

DATE STARTED 15.3.2013

DATE COMPLETED

OPRG. DEPT. CTPD

ENG. DEPT. AUT-PSAC

BLOCK REFERENCE

SAS INTERFACE PANEL +SAS I/F-4

S/S 8833

S-13516

RIYADH

SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء

نقل الكهرباء

National Grid sa

INDEX

PLANT NO.

DRAWING NUMBER

SHEET NO.

REV. NO.

P

C420

CD-290088

SHT

CONT.

00

NG/D2-D (2012/01)

DMS

VECTOR

NGD200

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	1	2	3	4	5	6	7	8	9	10	
A	A4										
BINARY INPUT CARD											
B	A4BIM P3 REC670										
LOCATION=P3											
PLANT ADAPTED CONFIGURATION											
C	+ -- X91										
	-- 1BI.01//										
	+ -- 2										
	-- 3BI.02//										
	+ -- 4										
	-- 5BI.03//										
	+ -- 6										
	-- 7BI.04//										
	+ -- 8										
	-- 9BI.05//										
	+ -- 10										
	-- 11BI.06//										
	+ -- 12										
	-- 13BI.07//										
	+ -- 14										
	-- 15BI.08//										
	+ -- 16										
	D	+ -- X92									
		-- 1BI.09//									
		+ -- 2									
		-- 3BI.10//									
		+ -- 4									
		-- 5BI.11//									
		+ -- 6									
		-- 7BI.12//									
		+ -- 8									
		-- 9BI.13//									
		+ -- 10									
		-- 11BI.14//									
		+ -- 12									
		-- 13BI.15//									
		+ -- 14									
-- 15BI.16//											
+ -- 16											
E		+ -- X101									
		-- 1BI.01//									
		+ -- 2									
		-- 3BI.02//									
		+ -- 4									
		-- 5BI.03//									
		+ -- 6									
		-- 7BI.04//									
		+ -- 8									
		-- 9BI.05//									
		+ -- 10									
		-- 11BI.06//									
		+ -- 12									
		-- 13BI.07//									
		+ -- 14									
	-- 15BI.08//										
	+ -- 16										
	F	+ -- X102									
		-- 1BI.09//									
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		-- 3BI.10//									
		+ -- 4									
		-- 5BI.11//									
		+ -- 6									
		-- 7BI.12//									
		+ -- 8									
		-- 9BI.13//									
		+ -- 10									
		-- 11BI.14//									
		+ -- 12									
		-- 13BI.15//									
		+ -- 14									
-- 15BI.16//											
+ -- 16											
G		+ -- X111									
		-- 1BI.01//									
		+ -- 2									
		-- 3BI.02//									
		+ -- 4									
		-- 5BI.03//									
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		-- 7BI.04//									
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		+ -- 10									
		-- 11BI.06//									
		+ -- 12									
		-- 13BI.07//									
		+ -- 14									
	-- 15BI.08//										
	+ -- 16										
	H	+ -- X112									
		-- 1BI.09//									
		+ -- 2									
		-- 3BI.10//									
		+ -- 4									
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		-- 9BI.13//									
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		-- 11BI.14//									
		+ -- 12									
		-- 13BI.15//									
		+ -- 14									
-- 15BI.16//											
+ -- 16											
AS-BUILT BY _____ DATE _____ CONTRACT NO. 11131060/00 JOB ORDER NO. S-13516											
BLOCK REFERENCE											
SAS INTERFACE PANEL +SAS I/F-4											
S/S 8833 S-13516											
RIYADH SAUDI ARABIA											
الشركة الوطنية لنقل الكهرباء National Grid sa											
INDEX PLANT NO. DRAWING NUMBER SHEET NO. REV. NO.											
P C420 CD-290088 294 295 00											
REV. NO. DATE DESCRIPTION OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC											
00 13 20 FOR APPROVAL											

	1	2	3	4	5	6	7	8	9	10
A	A4									
BINARY INPUT CARD										
B	A4BIM P3 REC670									
LOCATION=P3										
PLANT ADAPTED CONFIGURATION										
C	+ --- X121									
	- --- 1BI.01//									
	+ --- 2BI.02//									
	- --- 3BI.03//									
	+ --- 4BI.04//									
	- --- 5BI.05//									
	+ --- 6BI.06//									
	- --- 7BI.07//									
	+ --- 8BI.08//									
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	+ --- 12BI.12//									
	- --- 13BI.13//									
	+ --- 14BI.14//									
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	+ --- 16									
	+ --- X122									
	- --- 1BI.09//									
	+ --- 2BI.10//									
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	+ --- 4BI.12//									
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	+ --- 8BI.16//									
	- --- 9									
	+ --- X131									
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	+ --- 4BI.04//									
- --- 5BI.05//										
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+ --- 8BI.08//										
- --- 9										
+ --- X132										
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+ --- 8BI.16//										
- --- 9										
+ --- X141										
- --- 1BI.01//										
+ --- 2BI.02//										
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- --- 5BI.05//										
+ --- 6BI.06//										
- --- 7BI.07//										
+ --- 8BI.08//										
- --- 9										
+ --- X142										
- --- 1BI.09//										
+ --- 2BI.10//										
- --- 3BI.11//										
+ --- 4BI.12//										
- --- 5BI.13//										
+ --- 6BI.14//										
- --- 7BI.15//										
+ --- 8BI.16//										
- --- 9										
D	SHT.240/D1 TO D10									
E	SHT.241/D1 TO D10									
F	SHT.242/D1 TO D10									
G	AS-BUILT BY _____ DATE _____ CONTRACT NO. 11131060/00 JOB ORDER NO. S-13516									
			DRAWN BY RIZ CHECKED BY JKR							
			DATE STARTED 15.3.2013 DATE COMPLETED _____							
00 13 20 FOR APPROVAL			OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC							
REV. NO. DATE DESCRIPTION										
BLOCK REFERENCE										
SAS INTERFACE PANEL +SAS I/F-4										
S/S 8833 S-13516										
RIYADH SAUDI ARABIA										
الشركة الوطنية لنقل الكهرباء										
National Grid sa										
INDEX	PLANT NO.	DRAWING NUMBER				SHEET NO.		REV. NO.		
P	C420	CD-290088				SHT	CONT.	00		
						295	296			

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	211/B3		2		231/D2		2		234/D3		52		231/A8		2		236/D2		2		239/D3		52	
	211/A3		3		231/D3		3		234/D4		53		231/A8		3		236/D3		3		239/D4		53	
	211/B3		4		231/D4		4		234/D5		54		231/A9		4		236/D3		4		239/D5		54	
	211/B3		5		231/D4		5		234/D5		55		231/A9		5		236/D4		5		239/D5		55	
	211/C3		6		231/D5		6		234/D6		56		231/A9		6		236/D5		6		239/D6		56	
	211/B3		7		231/D5		7		234/D6		57		231/A9		7		236/D5		7		239/D6		57	
	211/C3		8		231/D6		8		234/D7		58		232/A2		8		236/D6		8		239/D7		58	
	SPARE		9		231/D6		9		234/D8		59		232/A8		9		236/D6		9		239/D8		59	
B	SPARE		10		231/D7		10		234/D8		60		232/A8		10		236/D7		10		239/D8		60	
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					231/D8		12		234/D10		62		232/A9		12		236/D8		12		239/D9		62	
					231/D9		13		235/D2		63		232/A9		13		236/D9		13		240/D2		63	
					231/D9		14		235/D2		64		232/A9		14		236/D9		14		240/D2		64	
					231/D10		15		235/D3		65		233/A6		15		237/D2		15		240/D3		65	
					232/D2		16		235/D3		66		233/A7		16		237/D3		16		240/D4		66	
					232/D3		17		235/D4		67		233/A8		17		237/D4		17		240/D5		67	
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					232/D4		19		235/D6		69		234/A2		19		237/D6		19		240/D7		69	
C					232/D4		20		235/D7		70		234/A6		20		237/D6		20		240/D8		70	
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					232/D5		22		235/D9		72		234/A8		22		238/D2		22		240/D10		72	
					232/D6		23		235/D10		73		235/A2		23		238/D3		23		SPARE		73	
					232/D6		24		SPARE		74		235/A7		24		238/D4		24		SPARE		74	
					232/D7		25		SPARE		75		235/A8		25		238/D5		25		SPARE		75	
					232/D8		26		SPARE		76		235/A8		26		238/D6		26		SPARE		76	
					232/D8		27		SPARE		77		235/A8		27		238/D7		27		SPARE		77	
					232/D9		28		SPARE		78		235/A8		28		238/D8		28		SPARE		78	
					232/D9		29		SPARE		79		235/A8		29		238/D9		29		SPARE		79	
D					232/D9		30		SPARE		80		235/A8		30		238/D10		30		SPARE		80	
					232/D10		31		SPARE		81		235/A8		31		239/D2		31		SPARE		81	
					233/D2		32		SPARE		82		235/A8		32				32		SPARE		82	
					233/D2		33		SPARE		83		235/A8		33				33		SPARE		83	
					233/D3		34		SPARE		84		235/A8		34				34		SPARE		84	
					233/D3		35		SPARE		85		235/A8		35				35		SPARE		85	
					233/D4		36		SPARE		86		235/A8		36				36		SPARE		86	
					233/D4		37		SPARE		87		235/A8		37				37		SPARE		87	
					233/D5		38		SPARE		88		235/A8		38				38		SPARE		88	
					233/D5		39		SPARE		89		235/A8		39				39		SPARE		89	
E					233/D5		40		SPARE		90		235/A8		40				40		SPARE		90	
					233/D6		41		SPARE				235/A8		41				41		SPARE			
					233/D6		42		SPARE				235/A8		42				42		SPARE			
					233/D7		43		SPARE				235/A8		43				43		SPARE			
					233/D8		44		SPARE				235/A8		44				44		SPARE			
					233/D8		45		SPARE				235/A8		45				45		SPARE			
					233/D9		46		SPARE				235/A8		46				46		SPARE			
					233/D9		47		SPARE				235/A8		47				47		SPARE			
					233/D10		48		SPARE				235/A8		48				48		SPARE			
					234/D2		49		SPARE				235/A8		49				49		SPARE			
F					234/D2		50		SPARE				235/A8		50				50		SPARE			
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												235/A8		96				96						
												235/A8		97				97						
												235/A8		98				98						
												235/A8		99				99						
												235/A8		100				100						
												235/A8		101				101						
												235/A8		102				102						
												235/A8		103				103						
												235/A8		104				104						
												235/A8		105				105						
												235/A8		106				106						
												235/A8		107										

1		2		3		4		5		6		7		8		9		10						
A	INTERNAL REFERENCE		X42 DC CKTS.		INTERNAL REFERENCE		X53 CONTROL & PROTN.		INTERNAL REFERENCE		X53 CONTROL & PROTN.		INTERNAL REFERENCE		X43 DC CKTS.		INTERNAL REFERENCE		X4 DC CKTS.		REFERENCE		X61 ALM. CKT.	
	236/A2	1	236/A8	2	241/D1	1	241/D2	2	244/D3	51	244/D3	52	241/A2	1	216/B3	1	212/E5	1	216/B3	2	212/E5	2	290/E5	3
B	236/A8	3	236/A8	4	241/D3	3	241/D3	4	244/D4	53	244/D4	54	241/A8	3	SPARE	3	290/E6	4	SPARE	4	SPARE	4	SPARE	5
	236/A9	5	236/A9	6	241/D4	5	241/D4	6	244/D5	55	244/D5	56	241/A9	5	SPARE	5	290/E6	5	SPARE	6	SPARE	6	SPARE	6
C	236/A9	7	236/A9	8	241/D5	7	241/D5	8	244/D6	57	244/D6	58	241/A9	7	SPARE	7	290/E6	6	SPARE	7	SPARE	7	SPARE	7
	237/A2	9	237/A8	10	241/D6	9	241/D6	10	244/D7	59	244/D7	60	242/A2	9	SPARE	9	290/E6	8	SPARE	8	SPARE	8	SPARE	8
D	237/A8	11	237/A8	12	241/D7	11	241/D7	12	244/D8	61	244/D8	62	242/A8	11	SPARE	11	290/E6	9	SPARE	9	SPARE	9	SPARE	9
	237/A9	13	237/A9	14	241/D8	13	241/D8	14	244/D9	63	244/D9	64	242/A8	12	SPARE	12	290/E6	10	SPARE	10	SPARE	10	SPARE	10
E	237/A9	15	237/A9	16	241/D9	15	241/D9	16	244/D10	65	244/D10	66	242/A9	13	SPARE	13	290/E6	11	SPARE	11	SPARE	11	SPARE	11
	238/A2	17	238/A6	18	241/D9	17	241/D9	18	SPARE	67	SPARE	68	242/A9	14	SPARE	14	290/E6	12	SPARE	12	SPARE	12	SPARE	12
F	238/A7	19	238/A7	20	242/D2	19	242/D2	20	SPARE	69	SPARE	70	243/A2	15	SPARE	15	290/E6	13	SPARE	13	SPARE	13	SPARE	13
	238/A7	21	238/A8	22	242/D3	21	242/D3	22	SPARE	71	SPARE	72	243/A7	16	SPARE	16	290/E6	14	SPARE	14	SPARE	14	SPARE	14
G	238/A8	23	238/A8	24	242/D4	23	242/D4	24	SPARE	73	SPARE	74	243/A8	17	SPARE	17	290/E6	15	SPARE	15	SPARE	15	SPARE	15
	238/A8	25	239/A2	26	242/D5	25	242/D5	26	SPARE	75	SPARE	76	243/A8	18	SPARE	18	290/E6	16	SPARE	16	SPARE	16	SPARE	16
H	239/A2	27	239/A6	28	242/D6	27	242/D6	28	SPARE	77	SPARE	78	244/A2	19	SPARE	19	290/E6	17	SPARE	17	SPARE	17	SPARE	17
	239/A7	29	239/A7	30	242/D7	29	242/D7	30	SPARE	79	SPARE	80	244/A6	20	SPARE	20	290/E6	18	SPARE	18	SPARE	18	SPARE	18
I	239/A8	31	239/A8	32	242/D8	31	242/D8	32	SPARE	81	SPARE	82	244/A7	21	SPARE	21	290/E6	19	SPARE	19	SPARE	19	SPARE	19
	239/A8	33	240/A2	34	242/D9	33	242/D9	34	SPARE	83	SPARE	84	244/A8	22	SPARE	22	290/E6	20	SPARE	20	SPARE	20	SPARE	20
J	240/A2	35	240/A6	36	242/D10	35	242/D10	36	SPARE	85	SPARE	86	244/A8	23	SPARE	23	290/E6	21	SPARE	21	SPARE	21	SPARE	21
	240/A7	37	240/A7	38	243/D2	37	243/D2	38	SPARE	87	SPARE	88	SPARE	24	SPARE	24	290/E6	22	SPARE	22	SPARE	22	SPARE	22
K	240/A8	39	240/A8	40	243/D3	39	243/D3	40	SPARE	89	SPARE	90	SPARE	25	SPARE	25	290/E6	23	SPARE	23	SPARE	23	SPARE	23
	240/A8	41	SPARE	42	243/D4	41	243/D4	42	SPARE	91	SPARE	92	SPARE	26	SPARE	26	290/E6	24	SPARE	24	SPARE	24	SPARE	24
L	SPARE	43	SPARE	44	243/D5	43	243/D5	44	SPARE	93	SPARE	94	SPARE	27	SPARE	27	290/E6	25	SPARE	25	SPARE	25	SPARE	25
	SPARE	45	SPARE	46	243/D6	45	243/D6	46	SPARE	95	SPARE	96	SPARE	28	SPARE	28	290/E6	26	SPARE	26	SPARE	26	SPARE	26
M	SPARE	47	SPARE	48	243/D7	47	243/D7	48	SPARE	97	SPARE	98	SPARE	29	SPARE	29	290/E6	27	SPARE	27	SPARE	27	SPARE	27
	SPARE	49	SPARE	50	243/D8	49	243/D8	50	SPARE	99	SPARE	100	SPARE	30	SPARE	30	290/E6	28	SPARE	28	SPARE	28	SPARE	28
N	SPARE	51	SPARE	52	243/D9	51	243/D9	52	SPARE	101	SPARE	102	SPARE	31	SPARE	31	290/E6	29	SPARE	29	SPARE	29	SPARE	29
	SPARE	53	SPARE	54	243/D10	53	243/D10	54	SPARE	103	SPARE	104	SPARE	32	SPARE	32	290/E6	30	SPARE	30	SPARE	30	SPARE	30
O	SPARE	55	SPARE	56	244/D2	55	244/D2	56	SPARE	105	SPARE	106	SPARE	33	SPARE	33	290/E6	31	SPARE	31	SPARE	31	SPARE	31
	SPARE	57	SPARE	58	244/D3	57	244/D3	58	SPARE	107	SPARE	108	SPARE	34	SPARE	34	290/E6	32	SPARE	32	SPARE	32	SPARE	32
P	SPARE	59	SPARE	60	244/D4	59	244/D4	60	SPARE	109	SPARE	110	SPARE	35	SPARE	35	290/E6	33	SPARE	33	SPARE	33	SPARE	33
	SPARE	61	SPARE	62	244/D5	61	244/D5	62	SPARE	111	SPARE	112	SPARE	36	SPARE	36	290/E6	34	SPARE	34	SPARE	34	SPARE	34
Q	SPARE	63	SPARE	64	244/D6	63	244/D6	64	SPARE	113	SPARE	114	SPARE	37	SPARE	37	290/E6	35	SPARE	35	SPARE	35	SPARE	35
	SPARE	65	SPARE	66	244/D7	65	244/D7	66	SPARE	115	SPARE	116	SPARE	38	SPARE	38	290/E6	36	SPARE	36	SPARE	36	SPARE	36
R	SPARE	67	SPARE	68	244/D8	67	244/D8	68	SPARE	117	SPARE	118	SPARE	39	SPARE	39	290/E6	37	SPARE	37	SPARE	37	SPARE	37
	SPARE	69	SPARE	70	244/D9	69	244/D9	70	SPARE	119	SPARE	120	SPARE	40	SPARE	40	290/E6	38	SPARE	38	SPARE	38	SPARE	38
S	SPARE	71	SPARE	72	244/D10	71	244/D10	72	SPARE	121	SPARE	122	SPARE	41	SPARE	41	290/E6	39	SPARE	39	SPARE	39	SPARE	39
	SPARE	73	SPARE	74	244/D10	73	244/D10	74	SPARE	123	SPARE	124	SPARE	42	SPARE	42	290/E6	40	SPARE	40	SPARE	40	SPARE	40
T	SPARE	75	SPARE	76	244/D10	75	244/D10	76	SPARE	125	SPARE	126	SPARE	43	SPARE	43	290/E6	41	SPARE	41	SPARE	41	SPARE	41
	SPARE	77	SPARE	78	244/D10	77	244/D10	78	SPARE	127	SPARE	128	SPARE	44	SPARE	44	290/E6	42	SPARE	42	SPARE	42	SPARE	42
U	SPARE	79	SPARE	80	244/D10	79	244/D10	80	SPARE	129	SPARE	130	SPARE	45	SPARE	45	290/E6	43	SPARE	43	SPARE	43	SPARE	43
	SPARE	81	SPARE	82	244/D10	81	244/D10	82	SPARE	131	SPARE	132	SPARE	46	SPARE	46	290/E6	44	SPARE	44	SPARE	44	SPARE	44
V	SPARE	83	SPARE	84	244/D10	83	244/D10	84	SPARE	133	SPARE	134	SPARE	47	SPARE	47	290/E6	45	SPARE	45	SPARE	45	SPARE	45
	SPARE	85	SPARE	86	244/D10	85	244/D10	86	SPARE	135	SPARE	136	SPARE	48	SPARE	48	290/E6	46	SPARE	46	SPARE	46	SPARE	46
W	SPARE	87	SPARE	88	244/D10	87	244/D10	88	SPARE	137	SPARE	138	SPARE	49	SPARE	49	290/E6	47	SPARE	47	SPARE	47	SPARE	47
	SPARE	89	SPARE	90	244/D10	89	244/D10	90	SPARE	139	SPARE	140	SPARE	50	SPARE	50	290/E6	48	SPARE	48	SPARE	48	SPARE	48
X	SPARE	91	SPARE	92	244/D10	91	244/D10	92	SPARE	141	SPARE	142	SPARE	51	SPARE	51	290/E6	49	SPARE	49	SPARE	49	SPARE	49
	SPARE	93	SPARE	94	244/D10	93	244/D10	94	SPARE	143	SPARE	144	SPARE	52	SPARE	52	290/E6	50	SPARE	50	SPARE	50	SPARE	50
Y	SPARE	95	SPARE	96	244/D10	95	244/D10	96	SPARE	145	SPARE	146	SPARE	53	SPARE	53	290/E6	51	SPARE	51	SPARE	51	SPARE	51
	SPARE	97	SPARE	98	244/D10	97	244/D10	98	SPARE	147	SPARE	148	SPARE	54	SPARE	54	290/E6	52	SPARE	52	SPARE	52	SPARE	52
Z	SPARE	99	SPARE	100	244/D10	99	244/D10	100	SPARE	149	SPARE	150	SPARE	55	SPARE	55	290/E6	53	SPARE	53	SPARE	53	SPARE	53
	SPARE	101	SPARE	102	244/D10	101	244/D10	102	SPARE	151	SPARE	152	SPARE	56	SPARE	56	290/E6	54	SPARE	54	SPARE	54	SPARE	54

AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131060/00			JOB ORDER NO. S-13516			TERMINAL BLOCK REFERENCE			الشركة الوطنية لنقل الكهرباء National Grid SA		
									SAS INTERFACE PANEL +SAS I/F-4					
			DRAWN BY RIZ CHECKED BY JKR						S/S 8833			S-13516		
00 13 20 FOR APPROVAL			DATE STARTED 15.3.2013 DATE COMPLETED _____						RIYADH			SAUDI ARABIA		
REV. NO. DATE DESCRIPTION			OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC									P C420 CD-290088		

SHEET NO.		REV. NO.	
SHT		CONT.	
302		NIL	

INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.
P	C420	CD-290088	302	NIL